

AIR QUALITY PERMIT

Issued To:	City of Bozeman Sanitary Landfill	Permit #2951-04
	20 East Olive	Administrative Amendment (AA)
	P.O. Box 1230	Request Received: 03/30/07
	Bozeman, MT 59771	Department Decision on AA: 06/18/07
		Permit Final:
		AFS #031-0013

An air quality permit, with conditions, is granted to the City of Bozeman Sanitary Landfill (Bozeman Landfill) pursuant to Section 75-2-204, 211, and 215, Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

Section I: Permitted Facilities

A. Permitted Facility

The City of Bozeman operates a sanitary landfill facility. The landfill is located approximately 2 miles north of Bozeman. The legal description is the SE¼ and SW¼ of Section 30, Township 1 South, Range 6 East, in Gallatin County, Montana. A complete listing of the emission sources at the landfill is contained in the permit analysis.

B. Current Permit Action

On March 30, 2007, the Department of Environmental Quality (Department) received a letter from Tetra Tech, Inc. on behalf of the Bozeman Landfill, requesting a modification to Permit #2951-03. After issuance of Permit #2951-00 in April 1997, the Bozeman Landfill proposed monitoring parameters using an “equivalent” approach with components installed on the Landfill Gas Extraction System (LGES) to demonstrate that emission levels were below threshold levels. The proposed monitoring parameters were approved by the Department in a letter dated September 18, 1997; however, the language in the permit was not updated. The current permit action is a request to update language to represent the equivalent monitoring approach that has been used by the Bozeman Landfill since 1997. In addition, the Department updated permit language and rule references to reflect current permit language and rule references.

Section II: Limitations and Conditions

A. Operational Requirements

1. The Bozeman Landfill shall construct and operate the landfill flare system as specified in their applications for their Montana Air Quality Permit and all supporting documentation (ARM 17.8.749).
2. The Bozeman Landfill shall install, operate, and maintain a flare capable of meeting the requirements contained in 40 CFR 60.18 (ARM 17.8.752).
3. As specified in 40 CFR 60.18, the flare shall be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours (ARM 17.8.752).
4. The Bozeman Landfill shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).

5. The Bozeman Landfill shall treat all unpaved portions of the haul roads, access roads, and the general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.4 (ARM 17.8.752).
6. The Bozeman Landfill shall install and continuously operate a thermocouple with high and low set points interlocked with the blower, to shut down the blower if thermocouple temperature falls outside the set points (ARM 17.8.749).
7. The Bozeman Landfill shall install and continuously operate a flowmeter and hour-meter, or any other equivalent device, on the flare system to determine the total flow of landfill gas to the flare (ARM 17.8.749).
8. The total volume of landfill gas sent to the flare shall not exceed 1.01×10^6 standard cubic feet per day (ARM 17.8.749). (Note: Standard conditions are 77°F and 1 atm pressure.)
9. The Bozeman Landfill shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements of 40 CFR Part 60, Subpart WWW, for the landfill (ARM 17.8.340).

B. Emission Limitations

1. Particulate emissions from the flare shall be limited to 0.10 grains per dry standard cubic foot (gr/dscf) corrected to 12% carbon dioxide (CO₂) (ARM 17.8.316).
2. The flare inlet concentrations shall be limited to the amounts contained in Table I (ARM 17.8.752 and MCA 75-2-215).

Table I. Flare Inlet Concentration Limitations

POLLUTANTS	FLARE INLET CONCENTRATION Parts per billion by volume (ppbv)
Benzene	7,740
Ethyl Benzene	22,300
Methylene Chloride	43,000
Vinyl Chloride	70,300
Methyl Bromide	500
Ethyl Chloride	15,300
Styrene	980
Tolulene	51,560
Xylenes	46,600
Chloroform	204
Carbon Tetrachloride	100
Trichloroethene	19,400
1,1,2-Trichloroethane	300
Perchloroethene	28,700
Chlorobenzene	799
1,1,2,2-Tetrachloroethane	200
p-Dichlorobenzene	3,190
Benzyl Chloride	200
1,2,4-Trichlorobenzene	200
Hexachlorobutadiene	50
Carbon Disulfide	590

C. Emission Testing

1. The Bozeman Landfill shall conduct semi-annual tests on the flare inlet concentration for the pollutants identified in Table I to demonstrate compliance with the conditions contained in Table I (ARM 17.8.105 and ARM 17.8.749).
2. All source tests must be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).
3. The Department may require further testing (ARM 17.8.105).

D. Operational Reporting Requirements

1. The Bozeman Landfill shall maintain either on-site or in an office proximal to the landfill (e.g. City of Bozeman) daily records identifying the total volume standard cubic foot (SCF) of landfill gas sent to the flare (ARM 17.8.749). (Note: Standard conditions are 77°F and 1 atm pressure.)
2. The Bozeman Landfill shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the permit analysis.

Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department.

In addition, Bozeman Landfill shall submit the following information annually to the Department by March 1 of each year. This information is required for the annual emission inventory, as well as to verify compliance with permit limitations (ARM 17.8.505).

- a. Total volume (SCF) of landfill gas sent to the flare; and
- b. Total hours of flare operation.
3. The Bozeman Landfill shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745 that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit. The notice must be submitted to the Department, in writing, 10 days prior to start-up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d) (ARM 17.8.745).
4. The records compiled in accordance with this permit must be maintained by Bozeman Landfill as a permanent business record for at least 5 years following the date of the measurement, must be available at the flare site or at an office proximal to the landfill (e.g. City of Bozeman) for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

E. Notification

1. The Bozeman Landfill shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.749):
 - a. Commencement of construction of any future gas extraction wells within 30 days after commencement of construction;
 - b. Anticipated connection date of future gas extraction wells to the flare system between 30 and 60 days prior to the actual connection date;
 - c. Actual connection date of future gas extraction wells to the flare system within 15 days after the actual connection date;
2. The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than 4 hours (ARM 17.8.110).

Section III: General Conditions

- A. Inspection - The Bozeman Landfill shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving the Bozeman Landfill of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.740, *et seq.* (ARM 17.8.756).
- D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 *et seq.*, MCA.
- E. Appeals - Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.
- F. Permit Inspection - As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the permitted source.

- G. Construction Commencement - Construction must begin within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked.
- H. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by the Bozeman Landfill may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.
- I. The Department may modify the conditions of this permit based on local conditions of any future site. These factors may include, but are not limited to, local terrain, meteorological conditions, proximity to residences, etc.

Permit Analysis
City of Bozeman Sanitary Landfill
Permit #2951-04

I. Introduction/Process Description

A. Introduction

The City of Bozeman Sanitary Landfill (Bozeman Landfill) currently operates a utility candlestick flare at the landfill located approximately 2 miles north of Bozeman. The legal description of the landfill is the SE¼ and SW¼ of Section 30, Township 1 South, Range 6 East, in Gallatin County, Montana.

B. Process Description

The Bozeman Landfill uses the landfill flare system to combust landfill gas collected by a gas extraction system. The collected gas is composed mainly of methane, carbon dioxide, and other trace gases. The gas extraction system was installed to comply with Resource Conservation and Recovery Act (RCRA) Subtitle D regulations, prevent the migration of gas into adjacent soils, and remove excess gas from within the waste mass to prevent vegetative stress, control odors, and maintain ground water quality.

The Bozeman Landfill facility consists of a landfill gas extraction system, which is routed to a candlestick flare capable of combusting approximately 660 standard cubic feet per minute (scfm) of landfill gas. The system consists of approximately 20 gas extraction wells, manifold piping, and a condensate collection tank.

A variety of pollutants are emitted from the flare including primarily carbon monoxide (CO), nitrous oxides (NO_x), and volatile organic compounds (VOCs). There are only minimal particulate emissions from the facility. A health risk assessment was completed on the emissions of hazardous air pollutants. A description of the health risk assessment is contained in Section VI of the analysis.

C. Permit History

On June 6, 1996, the Bozeman Landfill submitted an application for **Permit #2951-00** for the construction and operation of a utility candlestick flare at the landfill located approximately 2 miles north of Bozeman. The application was deemed complete August 7, 1996, upon receipt of the affidavit of public notice.

On August 5, 1998, the Bozeman Landfill submitted a complete permit application for **Permit #2951-01**, which was an alteration to their existing permit. The permit alteration corrected the flare inlet concentration limitations for ethyl chloride, toluene, and styrene. The concentrations were incorrectly identified during the initial permitting action. The correct flare inlet concentration limitations for ethyl chloride, toluene, and styrene are 15,300 parts per billion by volume (ppbv), 51,560 ppbv, and 980 ppbv, respectively. The permitting action did not result in an increase in actual emissions from the facility. However, because there was an increase in the allowable emissions, a risk assessment was completed to ensure that this facility would cause no more than a negligible risk to human health and the environment at its permitted levels. Permit #2951-01 replaced Permit #2951-00.

During the Department of Environmental Quality (Department) decision stage of the previous permit alteration, Maxim Technologies informed the Department that not all of the flare inlet concentrations were corrected. However, at that point it was too late for the Department to make the necessary changes. Therefore, **Permit #2951-02** corrected the flare inlet concentration limitations for methylene chloride, carbon disulfide, and hydrogen sulfide. The concentrations were the result of Department errors made during the initial permitting action and were inadvertently not corrected during the previous permitting action. The flare inlet concentration limitations for methylene chloride, carbon disulfide, and hydrogen sulfide were corrected to 43,000 ppbv, 590 ppbv, and 5000 ppbv, respectively. The permitting action did not result in an increase in actual emissions and the facility still caused no more than a negligible risk to human health and the environment. Permit #2951-02 replaced Permit #2951-01.

On April 11, 2001, Maxim Technologies, on behalf of the Bozeman Landfill, requested a modification to Permit #2951-02. Maxim Technologies requested that hydrogen sulfide be removed from Table I of the permit because it is not a hazardous air pollutant according to ARM 17.8.214, and therefore, compliance monitoring for hydrogen sulfide is not necessary. The Department removed hydrogen sulfide from Table I of the permit and removed the requirement for the Bozeman Landfill to do compliance monitoring for hydrogen sulfide. This permitting action was considered an administrative action and did not result in an increase in actual emissions. **Permit #2951-03** replaced Permit #2951-02.

D. Current Permit Action

On March 30, 2007, the Department received a letter from Tetra Tech, Inc. on behalf of the Bozeman Landfill, requesting a modification to Permit #2951-03. After issuance of Permit #2951-00 in April 1997, the Bozeman Landfill proposed monitoring parameters using an “equivalent” approach with components installed on the Landfill Gas Extraction System (LGES) to demonstrate that emission levels were below threshold levels. The proposed monitoring parameters were approved by the Department in a letter dated September 18, 1997; however, the language in the permit was not updated. The current permit action is a request to update language to represent the equivalent monitoring approach that has been used by the Bozeman Landfill since 1997. In addition, the Department updated permit language and rule references to reflect current permit language and rule references. **Permit #2951-04** will replace Permit #2951-03.

E. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department. Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1, General Provisions, including, but not limited to:

1. ARM 17.8.101 Definitions. This rule is a list of applicable definitions used in this chapter unless indicated otherwise in a specific subchapter.
2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment, including instruments and sensing devices, and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department. The Department has determined that semi-annual testing is necessary.
3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq.*, Montana Code Annotated (MCA).

The Bozeman Landfill shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than 4 hours.
5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Subchapter 2, Ambient Air Quality, including, but not limited to:

1. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
2. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
3. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
4. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
5. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
6. ARM 17.8.223 Ambient Standards for PM₁₀

The Bozeman Landfill must comply with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3, Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.
2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of 20% for all fugitive emission sources and that reasonable precautions be

taken to control emissions of airborne particulate matter. (2) Under this rule, the Bozeman Landfill shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this section.
 4. ARM 17.8.316 Incinerators. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any incinerator, particulate matter in excess of 0.10 grains per standard cubic foot of dry flue gas, adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used. Also no person shall cause or authorize to be discharged into the outdoor atmosphere from any incinerator, emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes.
 5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions.
 6. ARM 17.8.340 Standards of Performance for New Stationary Sources. 40 CFR Part 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills, does apply to the Bozeman Landfill because it was modified on or after May 30, 1991.
- D. ARM 17.8, Subchapter 5, Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:
1. ARM 17.8.504 Air Quality Permit Application Fees. The Bozeman Landfill shall submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. The Bozeman Landfill was not required to submit an application fee for the current permit action.
 2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department; and the air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.
- An air quality operation fee is separate and distinct from an air quality application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that pro-rate the required fee amount.
- E. ARM 17.8, Subchapter 7, Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
2. ARM 17.8.743 Montana Air Quality Permits -- When Required. This rule requires a person to obtain an air quality permit or permit alteration to construct, alter, or use any air contaminant sources that have the Potential to Emit (PTE) greater than 25 tons per year of any pollutant. The Bozeman Landfill has the PTE more than 25 tons per year of carbon monoxide (CO). In addition, an air quality permit must be obtained under the requirements of MCA 75-2-215; therefore, a permit is required.
3. ARM 17.8.744 Montana Air Quality Permits – General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality permit Program.
4. ARM 17.8.745 Montana Air Quality Permits – Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.
5. ARM 17.8.748 New or Modified Emitting Units – Permit Application Requirements. (1) This rule requires that an application for an air quality permit be submitted for a new or altered source or stack. The Bozeman Landfill was not required to submit an application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. The Bozeman Landfill was not required to submit a public notice for the current permit action because it is considered an administrative action.
6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.
7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.
8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the permitted source.
9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving the Bozeman Landfill of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.*
10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.
12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).
13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.
14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8, Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.
2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification with respect to each pollutant subject to regulation under the Federal Clean Air Act (FCAA) that it would emit, except as this subchapter would otherwise allow.

The Bozeman Landfill is not a PSD source since it is not a listed source and the site's potential to emit is below 250 tons per year of any pollutant.

G. MCA 75-2-103, Definitions provides in part as follows:

1. "Incinerator" means any single or multiple chambered combustion device that burns combustible material, alone or with a supplemental fuel or catalytic combustion assistance, primarily for the purpose of removal, destruction, disposal, or volume reduction of all or any portion of the input material.
2. "Solid waste" means all putrescible and nonputrescible solid, semisolid, liquid, or gaseous wastes, including, but not limited to....air pollution control facilities....

H. MCA 75-2-215, Solid or hazardous waste incineration - additional permit requirements:

1. MCA 75-2-215 requires air quality permits for all new solid waste incinerators. The Bozeman Landfill has obtained an air quality permit as required.
2. MCA 75-2-215 requires the applicant to provide, to the Department's satisfaction, a characterization and estimate of emissions and ambient concentrations of air pollutants, including hazardous air pollutants from the incineration of solid waste. The Department has determined that the information submitted by the Bozeman Landfill is sufficient to fulfill this requirement.
3. MCA 75-2-215 requires that the Department reach a determination that the projected emissions and ambient concentrations constitute a negligible risk to public health, safety and welfare. The Department completed a health risk assessment based on an emissions inventory and ambient air quality modeling submitted by the Bozeman Landfill. Based on the results of the emission inventory, modeling and health risk assessment, the Department determined that the Bozeman Landfill flare system is in compliance with this requirement.
4. MCA 75-2-215 requires the application of pollution control equipment or procedures that meet or exceed the BACT. The Department determined that the proposed flare system constitutes BACT.

III. BACT Determination

A BACT determination is required for each new or altered source. The Bozeman Landfill shall install on the new or altered source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized.

A BACT review was not conducted for this permitting action because there will not be an increase in emissions and there are no new or altered sources permitted as part of this action.

IV. Emissions Inventory

Landfill Flare

Criteria Pollutants

CO

Flowrate:	700	scfm	(Information from Company, 6/21/96)
% CH ₄ in Landfill Gas:	50%		
Emission Factor:	0.05	lb/hr/dscfm	(AP-42 Table 2.7-5)
Calculations:	$0.50 * 700 \text{ scfm} * 0.05 \text{ lb/hr/dscfm} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 76.65 \text{ ton/yr}$		

NO_x

Flowrate:	700	scfm	(Information from Company, 6/21/96)
% CH ₄ in Landfill Gas:	50%		
Emission Factor:	0.007	lb/hr/dscfm	(AP-42 Table 2.7-5)
Calculations:	$0.50 * 700 \text{ scfm} * 0.007 \text{ lb/hr/dscfm} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 10.73 \text{ ton/yr}$		

SO_x

Flowrate:	700	scfm	(Information from Company, 6/21/96)
% CH ₄ in Landfill Gas:	50%		
Emission Factor:	0.002	lb/hr/dscfm	(AP-42 Table 2.7-5)
Calculations:	$0.50 * 700 \text{ scfm} * 0.002 \text{ lb/hr/dscfm} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 3.07 \text{ ton/yr}$		

VOC

Control Efficiency:	98%	
Uncontrolled Emission Rate:	1.75e+00 tons/yr	(Sum of all VOCs from Application)
Controlled Emission Rate =	Uncontrolled Emission Rate (1-Control Efficiency)	
	$1.75 \text{ ton/yr} * (1 - 0.98) =$	0.035 ton/yr

Table I. Risk Assessment Pollutants

Pollutant	Controlled Emission Rate* (gr/sec)	Controlled Emission Rate* (ton/yr)	Worst Case Emission Rate** (gr/sec)	Worst Case Emission Rate** (ton/yr)
Benzene	1.66e-05	5.78e-04	1.66e-04	5.78e-03
Ethyl Benzene	6.50e-05	2.26e-03	6.50e-04	2.26e-02
Methylene Chloride	5.98e-06	2.07e-04	5.98e-05	2.07e-03
Vinyl Chloride	1.21e-04	4.20e-03	1.21e-03	4.20e-02
Methyl Bromide	1.31e-06	4.54e-05	1.31e-05	4.54e-04
Ethyl Chloride	2.67e-05	9.28e-04	2.67e-04	9.28e-03
Styrene	2.77e-06	9.62e-05	2.77e-05	9.62e-04
Toluene	1.28e-04	4.46e-03	1.28e-03	4.46e-02
Xylenes	1.36e-04	4.73e-03	1.36e-03	4.73e-02
Chloroform	6.70e-07	2.33e-05	6.70e-06	2.33e-04
Carbon Tetrachloride	4.23e-07	1.47e-05	4.23e-06	1.47e-04
Trichloroethene	7.02e-05	2.44e-03	7.02e-04	2.44e-02
1,1,2-Trichloroethane	1.39e-06	4.82e-05	1.39e-05	4.82e-04
Perchloroethene	1.31e-04	4.55e-03	1.31e-03	4.55e-02
Chlorobenzene	2.47e-06	8.59e-05	2.47e-05	8.59e-04
1,1,2,2-Tetrachloroethane	9.23e-07	3.21e-05	9.23e-06	3.21e-04
p-Dichlorobenzene	1.29e-05	4.48e-04	1.29e-04	4.48e-03
Benzyl Chloride	6.96e-07	2.42e-05	6.96e-06	2.42e-04
1,2,4-Trichlorobenzene	9.98e-07	3.47e-05	9.98e-06	3.47e-04
Hexachlorobutadiene	3.60e-07	1.25e-05	3.60e-06	1.25e-04
Carbon Disulfide	1.23e-03	4.27e-02	1.23e-02	4.27e-01
HCl	4.69e-02	1.63e+00	4.69e-01	1.63e+01
HF	1.36e-02	4.73e-01	1.36e-01	4.73e+00

*Based on 98% flare destruction efficiency

**Based on a 10 fold increase in emissions

V. Existing Air Quality

The facility is located in the SE¼ and the SW¼ of Section 30, Township 1 South, Range 6 East, in Gallatin County, Montana. The air quality of this area is classified as either better than National Standards or unclassifiable/attainment for the National Ambient air quality Standards (NAAQS) for criteria pollutants.

VI. Air Quality Impacts

As part of the original permit action the Department ran SCREEN3, an EPA-approved screening model, using the indicated inputs obtained from the permit application and an emission rate of 1 gram per second. The individual 1 hour results for each pollutant were then calculated prorating the actual emission rate in grams per second against the 1 gram per second ambient impact of $13.32 \mu\text{g}/\text{m}^3$. The maximum 1 hour concentrations were then used in the risk assessment. The modeling results are also valid for this permitting action.

SCREEN3 Model Run

Simple Terrain Inputs:

Source Type	=	FLARE
Emission Rate (G/S)	=	1.00000
Flare Stack Height (M)	=	5.500

Total Heat RLS (cal/sec)	=	0.164000E+07
Receptor Height (M)	=	1.0000
Urban/Rural Option	=	RURAL
Eff Release Height (M)	=	9.7625
Building Height (M)	=	0.0000
Minimum Horizontal Building Dimension (M)	=	0.0000
Maximum Horizontal Building Dimension (M)	=	0.0000

Full meteorology, screen automated distances, Schulman-Scire downwash, and a terrain height of 0.0 M above the stack base were used.

Summary of Screen Model Results

Calculation Procedure	Maximum Concentration ($\mu\text{g}/\text{m}^3$)	Distance of Maximum (M)	Terrain Height (M)
Simple Terrain	13.32	370	0

Based on this modeling, the Department determined that this project will cause minimal air quality impacts to the area. However, there will be emissions of hazardous air pollutants as a result of this project. The impact of these pollutants was analyzed as part of the risk assessment conducted for this project.

VII. Health Risk Assessment

As part of the original permit action, a health risk assessment was conducted by the Department to determine if the Bozeman Landfill flare complied with the negligible risk requirement of MCA 75-2-215. Only those hazardous air pollutants that were listed in the January 1992 California Air Pollution Control Officers Association (CAPCOA) Risk Assessment Guidelines, and for which there were established emission factors, were considered.

Table II shows the pollutants that were identified for the risk assessment, the emission rate in grams/second that was used in the modeling, the corresponding ambient concentration of the pollutants, and the resulting risk values. A copy of the modeling is contained with the submitted application.

Table II. City of Bozeman Sanitary Landfill Risk Assessment

Pollutant	Emission Rate* (gr/sec)	Scaled Impacts** ($\mu\text{g}/\text{m}^3$)	Cancer ELCR Chronic	Non-Cancer Chronic	Non-Cancer Acute
Benzene	1.66E-04	0.00022	0.18E-08	0.0000	0.0000

Pollutant	Emission Rate* (gr/sec)	Scaled Impacts** (ug/m3)	Cancer ELCR Chronic	Non-Cancer Chronic	Non-Cancer Acute
Ethyl Benzene	6.50E-04	0.00087	0.00	0.0000	0.0000
Methylene Chloride	5.98E-05	0.0000803	0.37E-10	0.0000	0.0000
Vinyl Chloride	1.21E-03	0.00161	0.13E-06	0.0000	0.0000
Methyl Bromide	1.31E-05	0.000017	0.00	0.0000	0.0000
Ethyl Chloride	9.28E-03	0.01236	0.00	0.0000	0.0000
Styrene	9.62E-04	0.00128	0.00	0.0000	0.0000
Toluene	4.46E-02	0.0594	0.00	0.0001	0.0000
Xylenes	1.36E-03	0.00181	0.00	0.0000	0.0000
Chloroform	6.70E-06	0.000009	0.21E-10	0.0000	0.0000
Carbon Tetrachloride	4.23E-06	0.000006	0.90E-10	0.0000	0.0000
Trichloroethene	7.02E-04	0.00094	0.19E-08	0.0000	0.0000
1,1,2-Trichloroethane	1.10E-05	0.000015	0.24E-09	0.0000	0.0000
Perchloroethene	1.31E-03	0.00175	0.10E-07	0.0000	0.0000
Chlorobenzene	2.47E-05	0.000033	0.00	0.0000	0.0000
1,1,2,2-Tetrachloroethane	9.23E-06	0.000012	0.70E-09	0.0000	0.0000
p-Dichlorobenzene	1.29E-04	0.000172	0.19E-08	0.0000	0.0000
Benzyl Chloride	6.96E-06	0.000009	0.00	0.0000	0.0000
1,2,4-Trichlorobenzene***	9.98E-06	0.000013	0.00	0.0000	0.0000
Hexachlorobutadiene	3.60E-06	0.000005	0.11E-9	0.0000	0.0000
Carbon Disulfide	1.23E-02	0.016	0.00	0.0000	0.0000
Hydrogen Sulfide	4.69E-02	0.063	0.00	0.0000	0.0000
HCl	4.69E-01	0.6247	0.00	0.0312	0.0002
HF	1.36E-01	0.1812	0.00	0.0307	0.0003
		MAX	0.13E-06	3.12E-02	3.0E-04
		TOTAL	0.15E-06	6.21E-02	5.0E-04

*Based on a 10 fold increase in controlled emissions.

**Represents annual ambient concentrations.

***No risk information is available for this pollutant.

Based on the results of this risk assessment, the Department has determined that the emissions from the Bozeman's Landfill flare will still constitute no more than a negligible risk to public health, safety, and welfare.

VIII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department has conducted a private property taking and damaging assessment and has determined there are no taking or damaging implications.

IX. Environmental Assessment

An environmental assessment is not required for the current permit action because it is an administrative action.

Analysis Completed By: Julie Merkel

Date: 05/25/07